Biology Chapter 17B

Class Mammalia

mammals - vertebrates with warm blood, hair, and milk
endothermic (homeothermic) - maintain a constant body temp.

Characteristics:
size range: mouselike shrews (less than 3" weigh only as much as a penny)
blue whale (110 ft. long, 170 tons) largest known living animal

Covering:
all mammals have hair
two types:
(1) underhair: soft, next to the skin insulating fur
(2) guard hair: coarser, longer, over underhair gives animal its color and provides protection

Nutrition:
teeth: incisors - used for gnawing or biting
canines - used for tearing
molars - used for grinding or chewing

vertebrates normally cannot digest cellulose - Ruminants can
ruminant - animal with a 4-part stomach
examples - cattle, deer, goats, giraffes, camel
1st part is called the rumen - holds the unchewed food until it can be chewed thoroughly
bacteria in the rumen produces enzymes which digest cellulose
partially digested food is called cud.
They regurgitate the cud into their mouths & chew it a 2nd time. They also have long digestive tracks which gives more time to digest cellulose.

Respiration: Lungs
diaphragm
larynx - "voice box" contains vocal cords

Circulation: Closed system
4 chambered heart
hibernation - read p 504

Reproduction: ovaries - eggs
testes - sperm
internal fertilization - occurs in the oviduct
Zygote divides several times before reaching the uterus
Zygote becomes implanted in the uterine wall
The region of implantation between the developing young & the tissues of the uterus will become the placenta
placenta - is composed of part of the uterine wall & tissue of embryo where nutrients, gases & wastes are exchanged

umbilical cord - connects the fetus to the placenta

mammary glands - milk-secreting glands from mammals

gestation - period of growth from fertilization to birth; Generally speaking; the longer the gestation; the more developed the young are when they are born.

Mammalian Orders
Class Mammalia is divided into 18 orders based upon: types of reproduction, type of teeth, and the design of their limbs

(1) Artiodactyla (AR te o dak ti la) 
  even-toed hoofed mammals (most have 2 toes, some have 4)
  171 species; all herbivores
  Examples: hippo, giraffe, cattle, buffalo, sheep, goats, antelope, deer, pig, camel
  vary in height from the 10" royal antelope to the 12' giraffe (tallest animal on earth)
  Divided into two groups:
    A. Those that do not chew the cud - pig, hippo
    B. Those that do chew the cud - the family Bovidae
       (Bo vuh dee) the bovines - cows, goats, sheep, antelope, oxen
       Animals that chew the cud are called ruminants.
       They have a stomach divided into 4 sections (the first section is called the rumen).

(2) Carnivora (car NIV o ra)
Latin word "carnis" means flesh - eat mostly flesh
over 200 species
Examples: bears, cats, dogs, foxes, raccoons, weasels, seals, walruses, sea lions, skunks, badgers, otters, mongooses, hyenas
bears: are more accurately called omnivores because they live on both plants and animals for food
  Kodiak bear (Alaskan brown bear) - the largest carnivore (a type of grizzly) over 8 feet and weighing over 1,000 pounds
wolves: travel in a pack of 2 to 3 dozen animals able to run 22-24 mph and keep that pace for miles
  enormous eaters - can consume 1/5 their body weight at one meal (similar to 100 lb. person eating 80 quarter-pound hamburgers)

(3) Cetacea (SEE tay she a)
Aquatic or marine mammals (do not come ashore - like seals and walrus)
Examples: whales, dolphins, porpoises not like fish in that they are warm-blooded, breathe with lungs, bear live young (called calves) and nurse their young with milk, have horizontal tail fins while fish
have vertical tail fins

Blue whale - the world's largest animal; approx. 110 feet in length and weighs 170 tons
Dolphins - are among the most intelligent of the mammals (rank second to chimpanzee)

(4) **Chiroptera** (ky ROP ter a)
*Flying mammals*
Example: bats (~ 900 species)
bats are nocturnal
Vampire bats - most feared and dangerous
found in tropical and sub-tropical America
has anti-coagulant in its saliva

(5) **Dermoptera** (der mop ter a)
*arboreal gliding mammals*
2 species
element: flying lemur

(6) **Edentata** (ee den ta ta)
means "without teeth"
Examples: sloth, armadillo, anteater
31 species
*toothless or peg-toothed mammals*
the anteater is actually toothless, sloths have teeth in their cheeks and armadillos have continuously growing peglike teeth for back in their jaws
sloth - the slowest land animal (6 to 8 feet per min.)

(7) **Hyracoidea** (hy ra coi de a)
11 species
*Defenseless mammals with padded feet*
Example: hyrax also called a coney (see Proverbs 30:26)
look like short-eared rabbits but have teeth like a rhino with hoofs on their toes and pads on their feet (the foot pads are like little suction cups that allow the otherwise defenseless animal to cling to the rook for protection)

(8) **Insectivora** (in sec tiv o ra)
400 species
*Insect eating animals*
Examples: shrew, mole, and hedgehogs
feed mostly on insects and worms but will also eat seeds, gnats, and other plants
high metabolism - must eat almost constantly

live a rapid life: heart beats over 1,000 beats per minute
some live a little more than 1 year
pygmy shrew - the smallest mammal (body is less than 2" and weighs .05 - .07 of an ounce)

(9) **Lagomorpha** (lag o mor fa)
63 species
*mammals with four upper incisor teeth*
elements: hares, rabbits, pikas
(10) **Marsupialia** (mar SOO pee ay le a)
   242 species
   *pouched mammals*
   examples: koala, kangaroo, wallaby, wombat, phalanger, Tasmanian devil, opossum
   the abdominal pouch is called a **marsupium**
   read page 507

(11) **Monotremata** (MAHN uh tree ma tuh)
   6 species
   *egg-laying mammals* (oviparous)
   examples: duckbilled platypus, spiny anteater

(12) **Perissodactyla** (pe ris so dak ti la)
   16 species
   *odd-toed hoofed mammals* (hoofed animals are called **ungulates**)
   examples: horse, donkeys, rhino, zebra, tapir (looks a lot like a pig with an extra long snout)
   have simple stomachs

(13) **Pholidota** (fol i do ta)
   8 species
   *mammals with "horny scales"*
   example: pangolin (scaly anteater)
   Has a protective hide like an armadillo. The plates are made from fused bundles of hair in the skin rather than from horn as in armadillos.

(14) **Primata**
   166 species
   *tree-dwelling mammals / the erect mammals*
   examples: apes, monkeys, ring-tailed lemur, gibbon, marmosets
   apes - are primates without tails
   the largest ape - mountain gorilla (5 1/2 ft. tall and weighs 430 pounds)
   the smallest ape - gibbon (16-26 inches)

(15) **Proboscidea** (pro ba sid e a)
   2 species
   *mammals with trunks*
   examples: elephant (African & Asian)
   The elephant is the largest of the land mammals. The African elephant is larger and has bigger ears than the Asian elephant. Largest was 13'4" high, 35' long, weight 13 tons.

(16) **Rodentia** (ro den che a)
   1,687 species (the largest mammalian order)
   *gnawing mammals*
   examples: squirrel, beaver, rats, mice, porcupines, gerbil, chipmuck
   Have two pairs of sharp, chisel-like incisor teeth. These
large teeth do not wear out because they keep growing as long as the animal lives. If the rodent does not use its incisors, they'll grow so long that the animal could not close its mouth.

(17) **Sirenia** (sy re ne a)
4 species
*aquatic mammals called "sea cows"
examples: manatees and dugongs (doo' gongz)
Often called "sea cows" because they graze like cows. Ancient sailors called these animals sirens, which is Greek for "sea nymph," or mermaid.

(18) **Tubulidentata** (Tu' bu li den ta' te)
1 specie
*ant-eating mammals with tubed teeth
example: aardvark